

FUELS INDUSTRY RESPONSE  
TO EPA'S CDIRP  
PROGRESS REPORT

# FUELS INDUSTRY RESPONSE

## EPA'S PROGRESS REPORT:

- Adequately describes the current state of Refining Diesel Desulfurization Technology
- Only reports positive aspects of Refinery preparation for Highway Diesel Rule compliance
- Fails to address progress on non-Refinery Desulfurization Technology issues which are crucial to the successful implementation of the Highway Diesel Rule

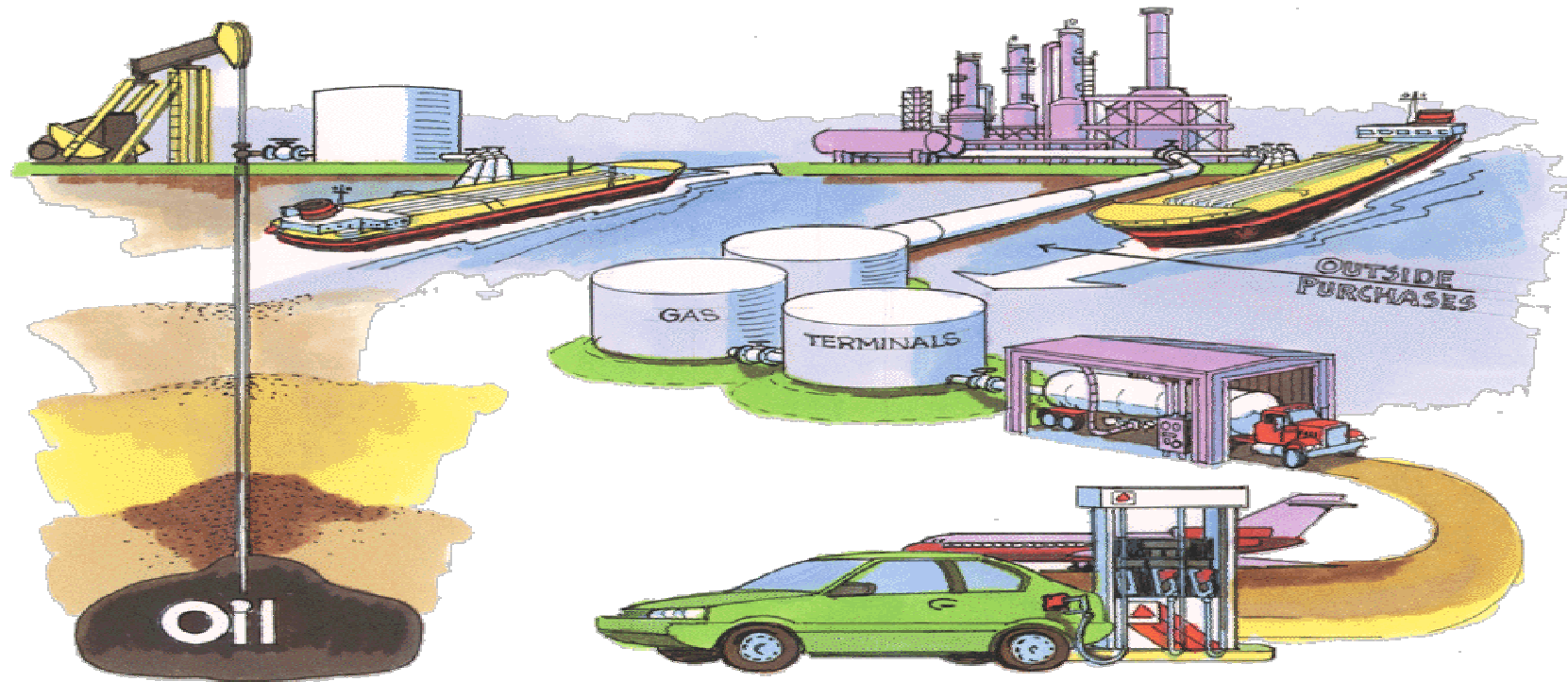
# Non-Refinery Desulfurization Technology Issues

- These issues are not currently showstoppers
- Have the potential to become showstoppers
- If these issues are not to be addressed by CDIRP, they need to be recognized by CDIRP and EPA needs to establish some other process to be sure that they are addressed
- EPA needs to track and report progress

# Non-Refinery Desulfurization Technology Issues

- Non-Road Diesel Requirements
- Sulfur Measurement Technology
- Contamination Impacts
- Sulfur Credit Trading Program needs Flexibility
- Systemwide Accumulated ULSD Losses need to be Addressed

**PRODUCT DISTRIBUTION SYSTEM**  
**ALL THE PARTS MUST WORK**  
**OR THE SYSTEM DOES NOT WORK**



# REFINING AND DISTRIBUTION

## A LARGE AND COMPLEX SYSTEM:

- ♦ 150 Refineries - Crude Capacity 17 million barrels per day
- ♦ 72,000 miles of Product Pipelines
- ♦ 38 Jones Act Tankers (move products between U.S. ports)
- ♦ 3,250 Coastal and Inland Barges
- ♦ 200,000 Rail Tank Cars
- ♦ 100,000 Tank Trucks
- ♦ 1,400 Petroleum Product Terminals
- ♦ 175,000 Retail Outlets

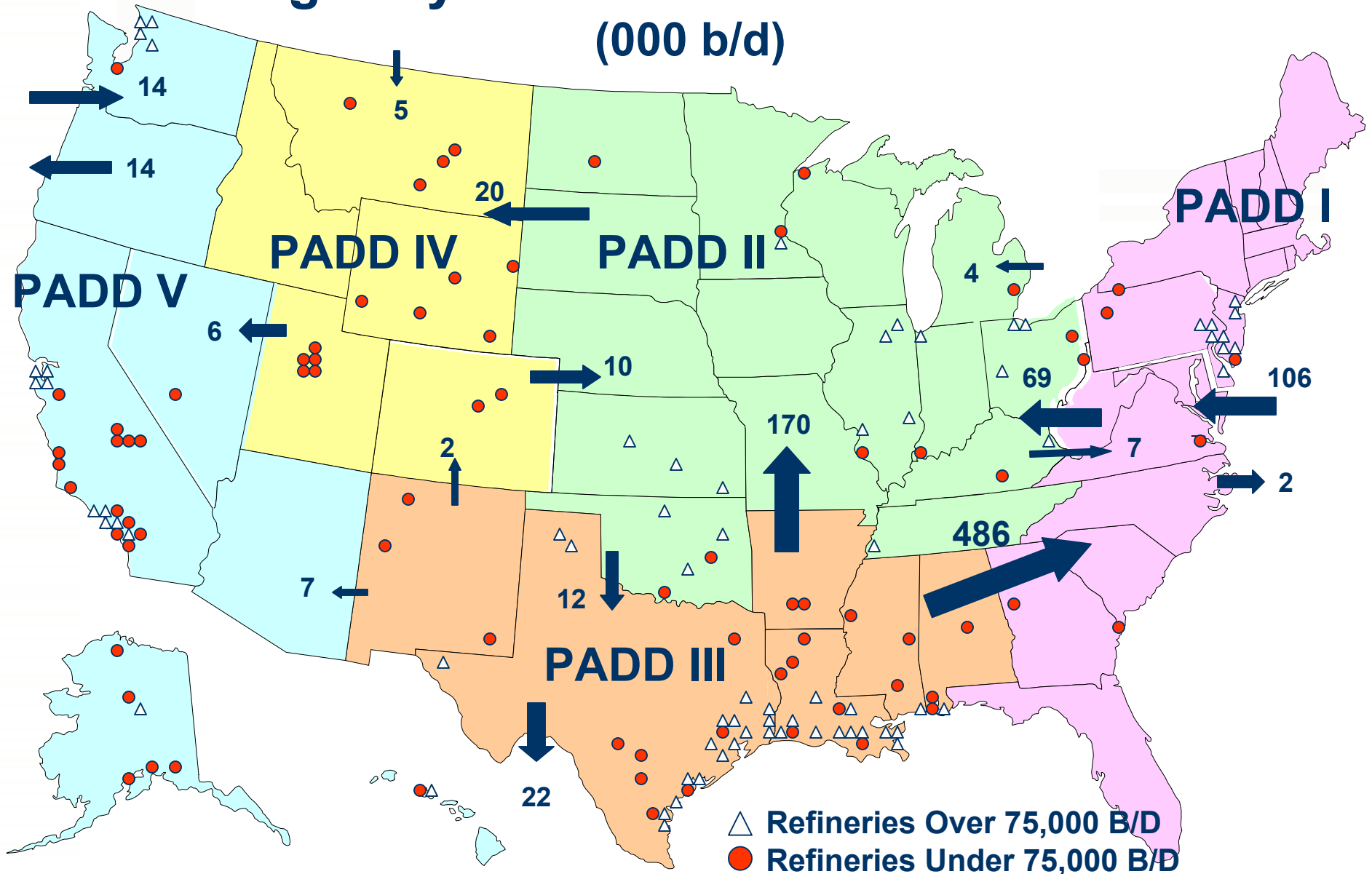
130 Billion Gallons of Gasoline (EIA)

60 Billion Gallons of Diesel and Heating Oil (EIA)

25 Billion Gallons of Jet Fuel (EIA)

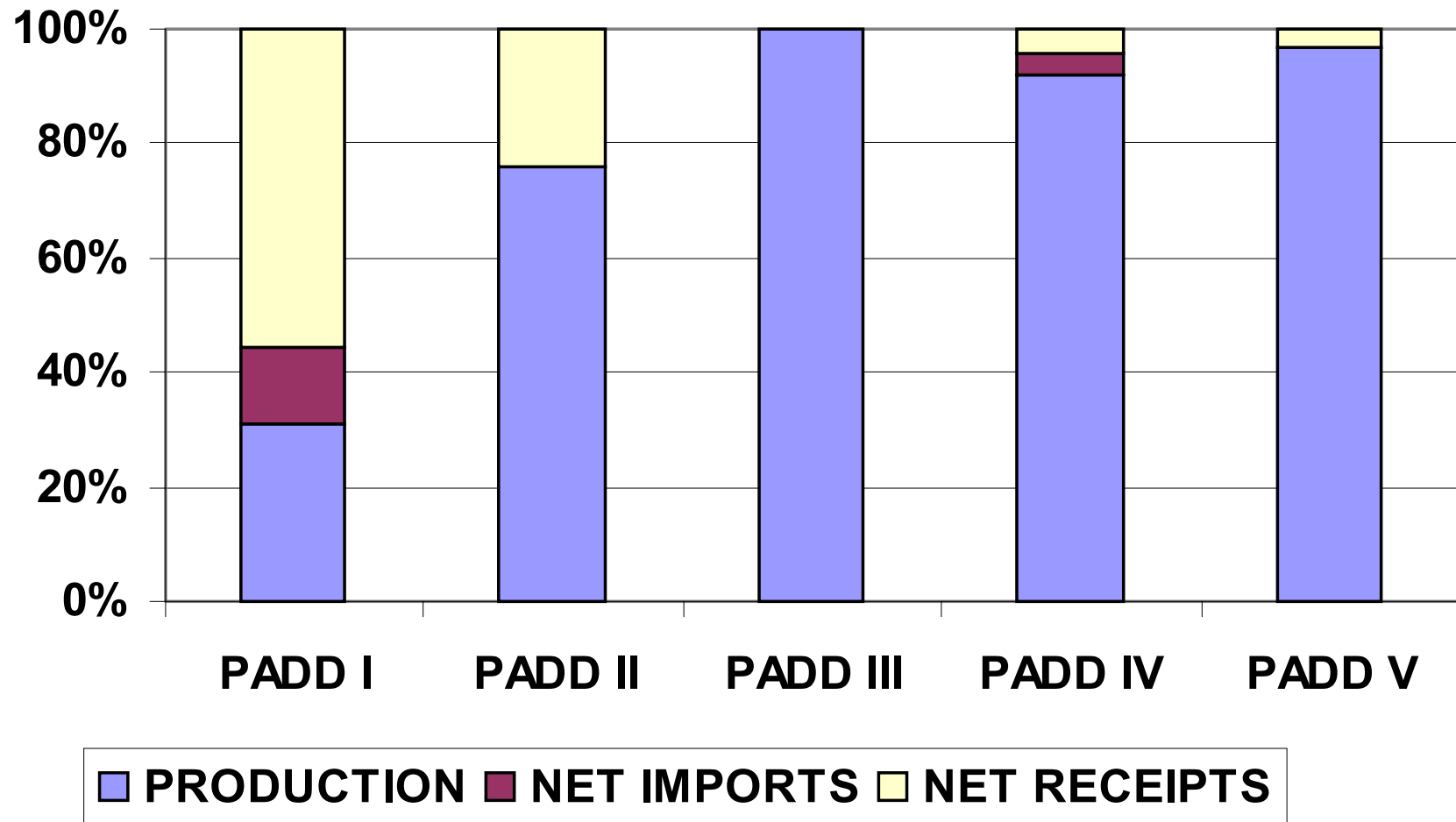
# Highway Diesel Movements in 2001

(000 b/d)



NPRA 2002

# HIGHWAY DIESEL SUPPLY SOURCES IN 2001





# REFINING AND DISTRIBUTION

## REFINING PROCESS:

Crude Oil (Hydrogen & Carbon Molecules)

- Different Qualities - Gravity (Heavy/Light) and Sulfur (Sweet/Sour)

1. Separate the Crude Oil into Different Fractions (Light to Heavy)
  - Atmospheric and Vacuum Distillation
2. Convert Fractions into Distinct Components
  - Cracking – Large/Complex Molecules into Lighter/Simpler Molecules
  - Combining – Smaller Unstable Molecules into Larger Stable Molecules
  - Rearranging – Alter the Structure of the Molecules (Straight Chain to Branch Chain)
3. Blend the Components into Finished Products

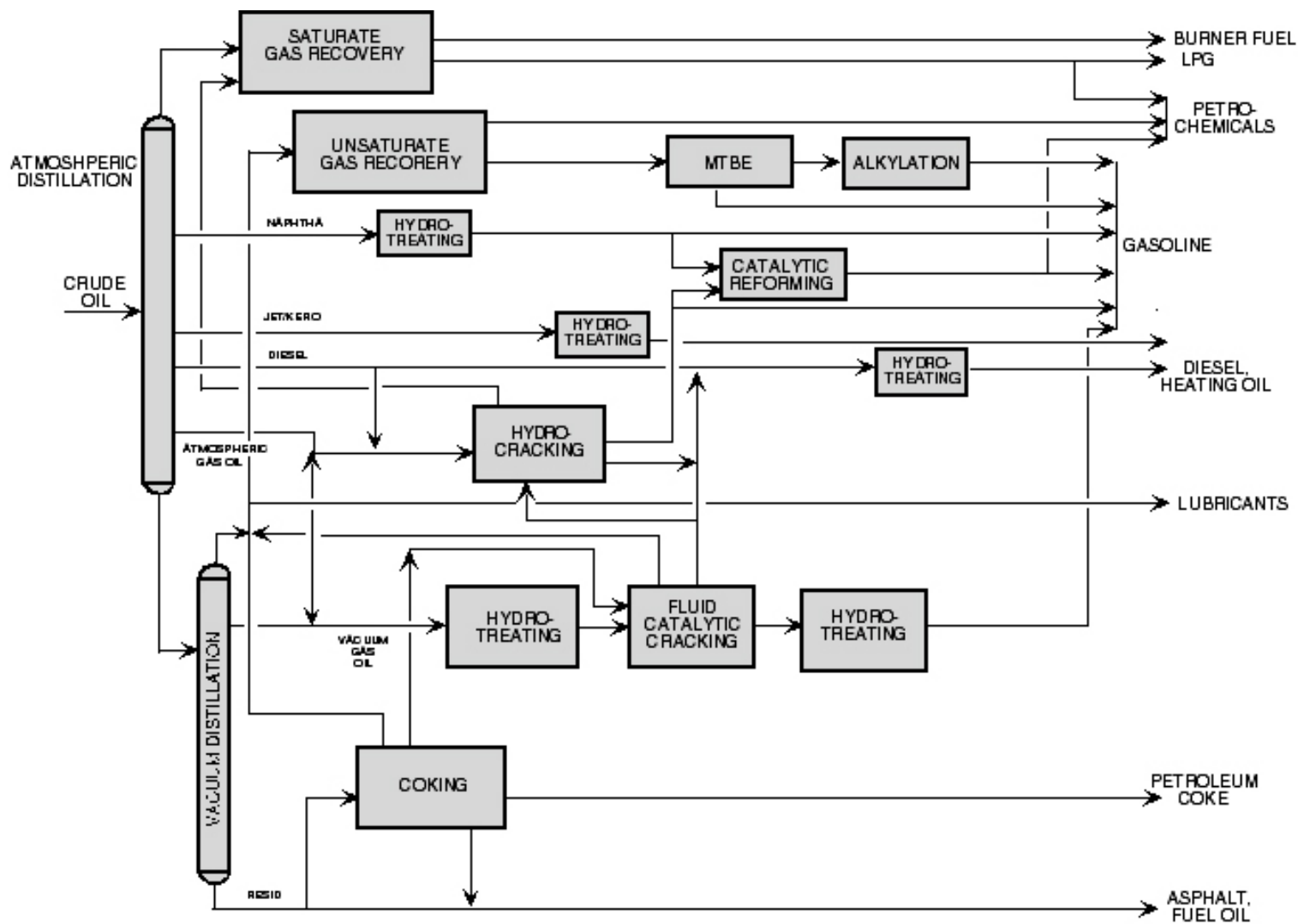
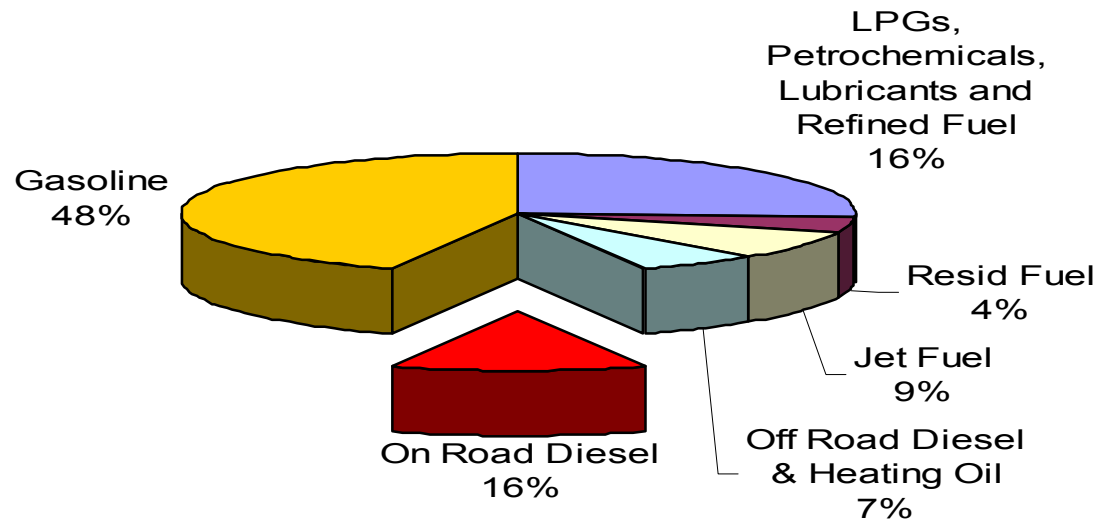


FIGURE C-7. SIMPLIFIED FLOW CHART OF A COMPLEX REFINERY

# REFINING AND DISTRIBUTION

## TYPICAL REFINERY PRODUCTION IN 2001



# REFINING AND DISTRIBUTION

## Product Grades Needed From a Gulf Coast Refinery (Summer = 17):

Gasoline:	Premium Reformulated (RFG) (Southern and Northern)
	Regular Reformulated (RFG) (Southern and Northern)
	Premium Conventional (7.0# RVP)
	Premium Conventional (7.8# RVP)
	Premium Conventional (9.0# RVP)
	Regular Conventional (7.0# RVP)
	Regular Conventional (7.8# RVP)
	Regular Conventional (9.0# RVP)
	Premium RBOB (Blending with Ethanol)
	Regular RBOB (Blending with Ethanol)
Jet Fuel:	Turbine A
Diesel Fuels:	Low Sulfur Diesel (2 Dye Levels)
	High Sulfur Diesel (Dyed and Undyed Exports)

# REFINING AND DISTRIBUTION

## PIPELINES:

- ◆ Typically large refined petroleum pipelines have from 30 to 50 different products that are regularly moving over a pipeline cycle
  - *The Colonial Pipeline has 24 grades of gasoline, 5 grades of aviation fuel, and 7 grades of distillate that are shipped in their fungible system plus other products that are shipped on a segregated basis*
- ◆ Product in pipelines normally move at a speed of about 3 to 8 miles per hour
  - *It takes about 15 days for product to get from the Gulf Coast to New York harbor*

# ULSD DISTRIBUTION CONCERNS

## SULFUR MEASUREMENT CHALLENGE:

- ◆ **Sulfur measurement precision and allowable test tolerance will define the refinery sulfur level targets and pipeline and terminal off-spec determination**
- ◆ **EPA Primary Test Method lacks acceptable precision**
- ◆ **Pipelines need a fast responding inline sulfur analyzer-None exists today**
- ◆ **Terminals need a foolproof indicator of sulfur content-None exists today**

# ULSD DISTRIBUTION CONCERNS

## CONTAMINATION CONCERNS:

<b>10,000 Barrels of 15 ppm ULSD <u>contaminated with:</u></b>	<b>&lt;500 ppm Diesel Fuel</b>	<b>&lt;3000 ppm Jet/ Diesel Fuel</b>	<b>&lt;5000 ppm Heating Oil</b>
<b>10 Barrels or .1%</b>	<b>+ .5 ppm</b>	<b>+ 3 ppm</b>	<b>+ 5 ppm</b>
<b>50 Barrels or .5%</b>	<b>+ 2.5 ppm</b>	<b>+ 15 ppm</b>	<b>+ 25 ppm</b>
<b>100 Barrels or 1%</b>	<b>+ 5 ppm</b>	<b>+ 30 ppm</b>	<b>+ 50 ppm</b>

# ULSD DISTRIBUTION CONCERNS

## REFINERY ISSUES

- ◆ **Increase in number of distillate products**
- ◆ **Contamination concerns inside the refinery**
  - **Loss of ULSD volume**
- ◆ **Production during turnarounds and unplanned upsets on hydrotreating units**



# ULSD DISTRIBUTION CONCERNS

## PIPELINE AND TERMINAL ISSUES:

- ◆ **Increasing number of product grades**
  - Will two grades of highway diesel be carried?
- ◆ **Limited tankage**
- ◆ **Contamination Concerns**
- ◆ **Downgrades and volume imbalances**
- ◆ **Transmix/Interface**